Neutralization Followed by Supercritical Water Oxidation

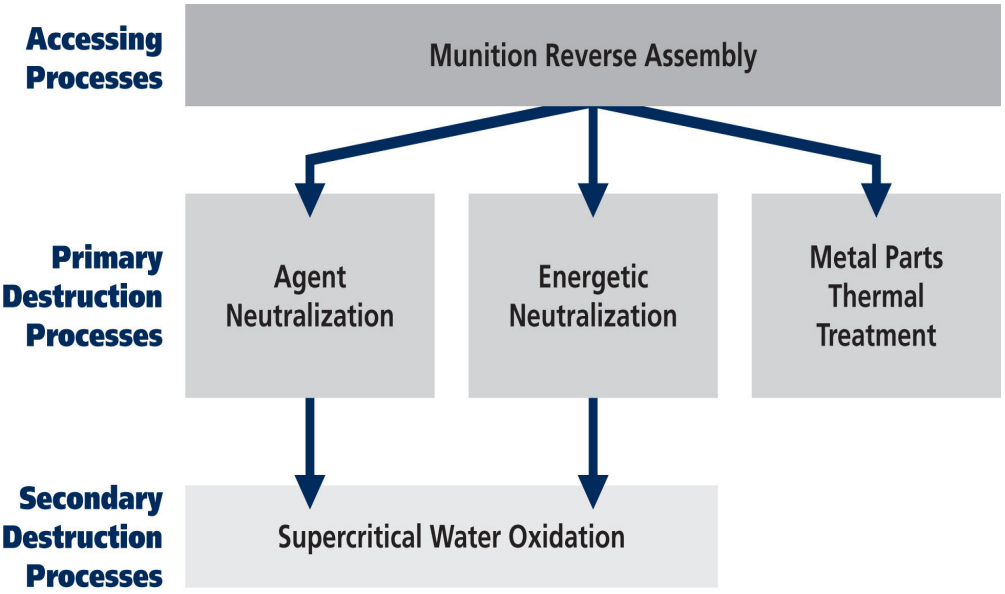
Blue Grass Chemical Stockpile Outreach Office

A Partnership for Safe Chemical Weapons Destruction

Together with the Blue Grass Army Depot, the Assembled Chemical Weapons Alternatives program has worked with the community in selecting neutralization followed by supercritical water oxidation (SCWO) as the technology to destroy the chemical weapons stored at the depot. The Bechtel Parsons Blue Grass Team was awarded a contract in June 2003 to design, construct, test, operate and close the Blue Grass Chemical Agent-Destruction Pilot Plant.

How Neutralization Followed by SCWO Works

- Munitions are disassembled by modified reverse assembly. The chemical agents and energetics are separated and chemically mixed with caustic or water to destroy the chemical agent. The resulting chemical compounds, known as hydrolysates, are held and tested to ensure agent destruction before proceeding to secondary treatment.
- The agent and energetic hydrolysates are fed to the SCWO units to destroy the organic materials. SCWO subjects the hydrolysate to very high temperatures and pressures, breaking them down into carbon dioxide, water and salts.
- Metal parts are first cleaned by a high pressure water washout and then thermally decontaminated by being heated to 1,000 degrees Fahrenheit for a minimum of 15 minutes. The metal parts can then be safely recycled.
- Gas effluents are filtered through a series of HEPA and carbon filters before being released to the atmosphere. Water is recycled into the pilot plant facility and reused as part of the destruction process.



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